

Metadata & Findability

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Version: 092024



Findability



Human findable



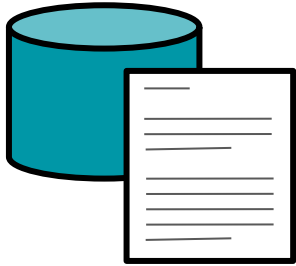
Machine findable



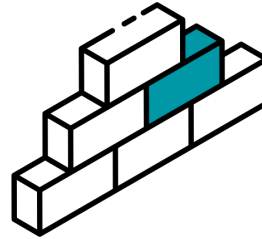
What do you know about metadata?



What is Metadata



Data to
describe Data



Structured
data



Descriptor with
clear meaning

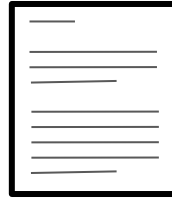


“Love note to the
future about data”

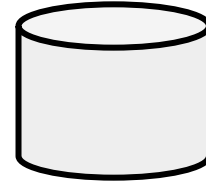
General structure of Metadata

Property A
Property B
Property C
Property D
etc

Properties

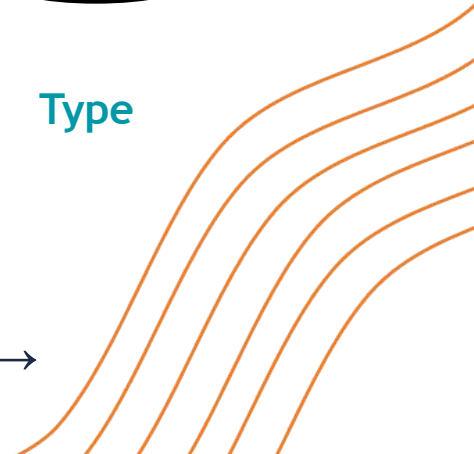


Profile



Type

One example →



Type

Profile

Recipe

A Schema.org Type

Thing > CreativeWork > HowTo > Recipe

[more...]

A recipe. For dietary restrictions covered by the recipe, a few common restrictions are enumerated via `suitableForDiet`. The `keywords` property can also be used to add more detail.

Property	Expected Type	Description
Properties from Recipe		
<code>cookTime</code>	Duration	The time it takes to actually cook the dish, in ISO 8601 duration format.
<code>cookingMethod</code>	Text	The method of cooking, such as Frying, Steaming, ...
<code>nutrition</code>	NutritionInformation	Nutrition information about the recipe or menu item.
<code>recipeCategory</code>	Text	The category of the recipe—for example, appetizer, entree, etc.
<code>recipeCuisine</code>	Text	The cuisine of the recipe (for example, French or Ethiopian).
<code>recipeIngredient</code>	Text	A single ingredient used in the recipe, e.g. sugar, flour or garlic. Supersedes <code>ingredients</code> .
<code>recipeInstructions</code>	CreativeWork or ItemList or Text	A step in making the recipe, in the form of a single item (document, video, etc.) or an ordered list with <code>HowToStep</code> and/or <code>HowToSection</code> items.
<code>recipeYield</code>	QuantitativeValue or Text	The quantity produced by the recipe (for example, number of people served, number of servings, etc).
<code>suitableForDiet</code>	RestrictedDiet	Indicates a dietary restriction or guideline for which this recipe or menu item is suitable, e.g. diabetic, halal etc.
Properties from HowTo		
<code>estimatedCost</code>	MonetaryAmount or Text	The estimated cost of the supply or supplies consumed when performing instructions.
<code>performTime</code>	Duration	The length of time it takes to perform instructions or a direction (not including time to prepare the supplies), in ISO 8601 duration format.
<code>prepTime</code>	Duration	The length of time it takes to prepare the items to be used in instructions or a direction, in ISO 8601 duration format.
	CreativeWork or HowToSection or Text	A single step item (as <code>HowToStep</code> , text, document, video, etc.) or a <code>HowToSection</code> . Supersedes <code>steps</code> .

Type

Profile

Recipe

A Schema.org Type

Thing > CreativeWork > HowTo > Recipe

[more...]

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	CreativeWork or HowToSection or	A single step item (as HowToStep, text, document, video, etc.) or a HowToSection. Supersedes steps .



Schema.org

schema.org

Custom Search

AboutSchemasDocumentation

Welcome to Schema.org

Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond.

Schema.org vocabulary can be used with many different encodings, including RDFa, Microdata and JSON-LD. These vocabularies cover entities, relationships between entities and actions, and can easily be extended through a well-documented extension model. Over 10 million sites use Schema.org to markup their web pages and email messages. Many applications from Google, Microsoft, Pinterest, Yandex and others already use these vocabularies to power rich, extensible experiences.

Founded by Google, Microsoft, Yahoo and Yandex, Schema.org vocabularies are developed by an open [community](#) process, using the public-schemaorg@w3.org mailing list and through [GitHub](#).

A shared vocabulary makes it easier for webmasters and developers to decide on a schema and get the maximum benefit for their efforts. It is in this spirit that the founders, together with the larger community have come together – to provide a shared collection of schemas.

We invite you to [get started!](#)

View our blog at blog.schema.org or see [release history](#) for version 3.3.

[Terms and conditions](#)

- A consortium:
 - Describe online information
 - Improve search efficacy
- Controlled vocabulary
 - Metadata for the world
 - Several profiles



Schema.org

Types:

Close hierarchy / Open hierarchy

▼ Thing -

- ▶ Action +
- ▶ BioChemEntity +
- ▶ CreativeWork +
- ▶ Event +
- ▶ Intangible +
- ▶ MedicalEntity +
- ▶ Organization +
- ▶ Person +
- ▶ Place +
- ▶ Product +
- Taxon

More specific Types

- BusinessEvent
 - ChildrensEvent
 - ComedyEvent
- etc ...

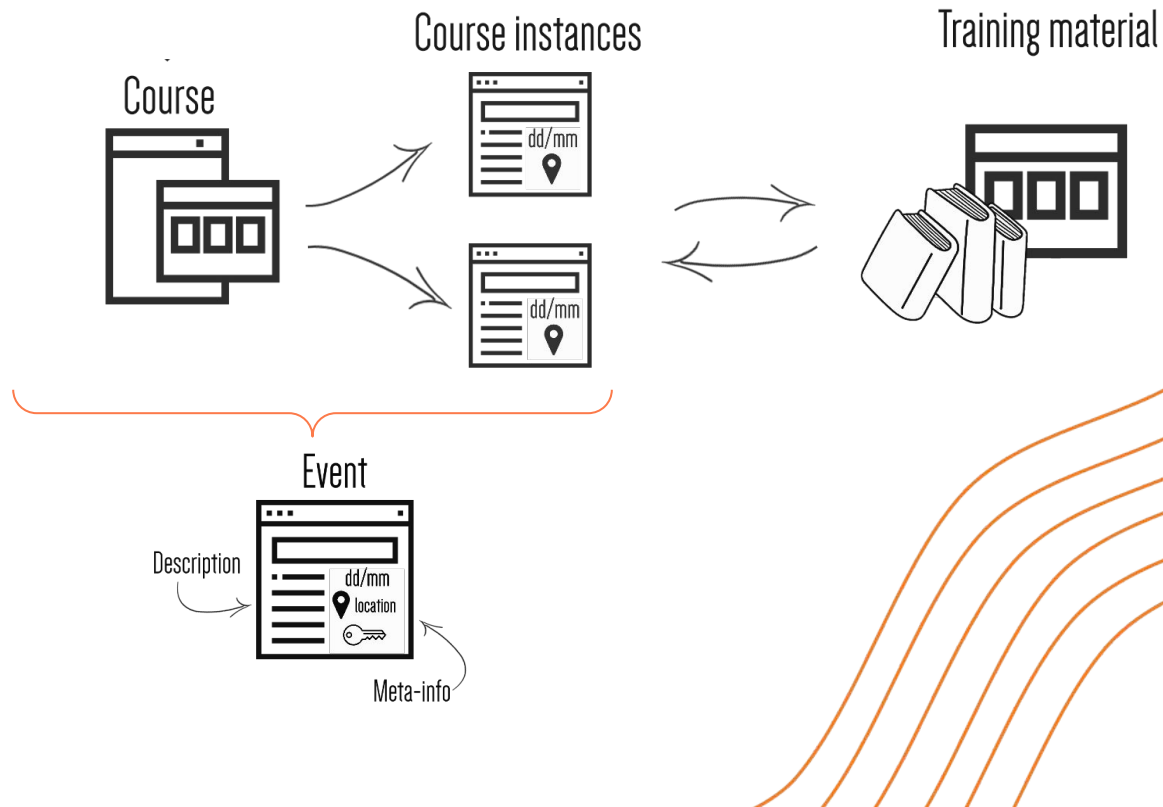
Profile

Property	Expected type	Description
about	thing	...
actor	person	...
attendee	Person or Org	...

What training types exist

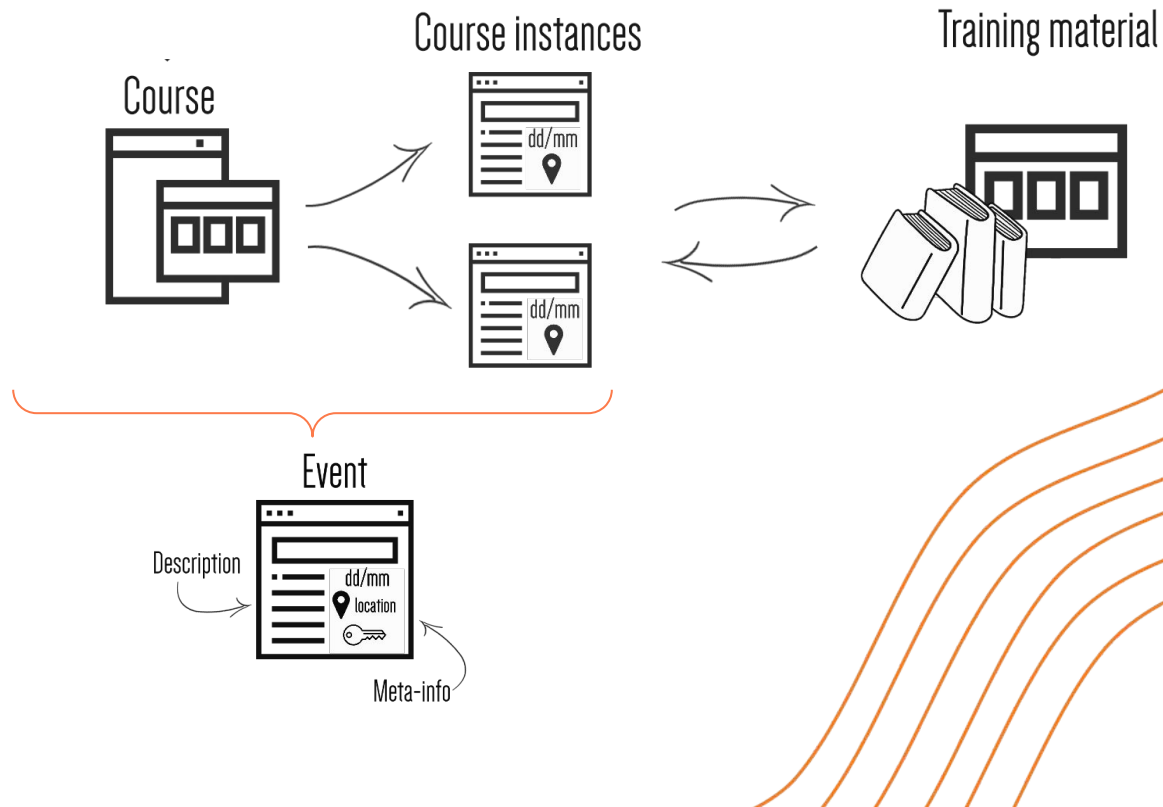


Types for training



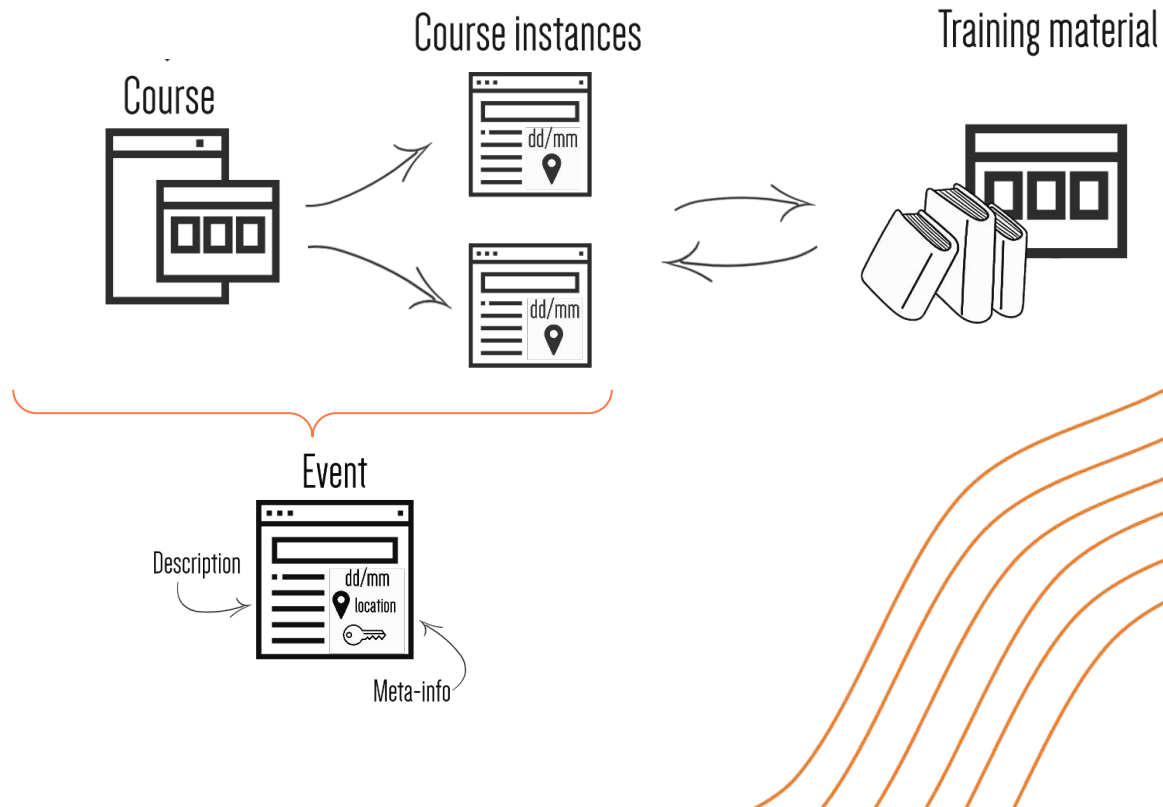
Types for training

- Course:
 - FAIR training material made *by design*

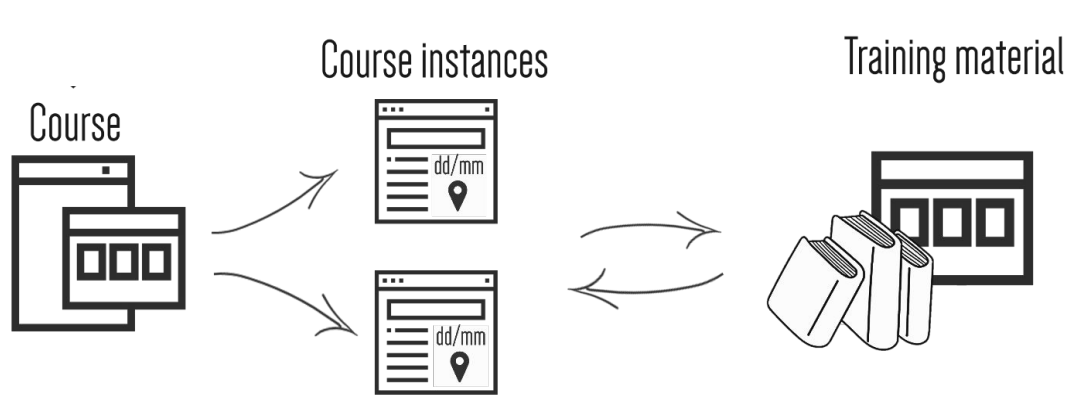


Types for training

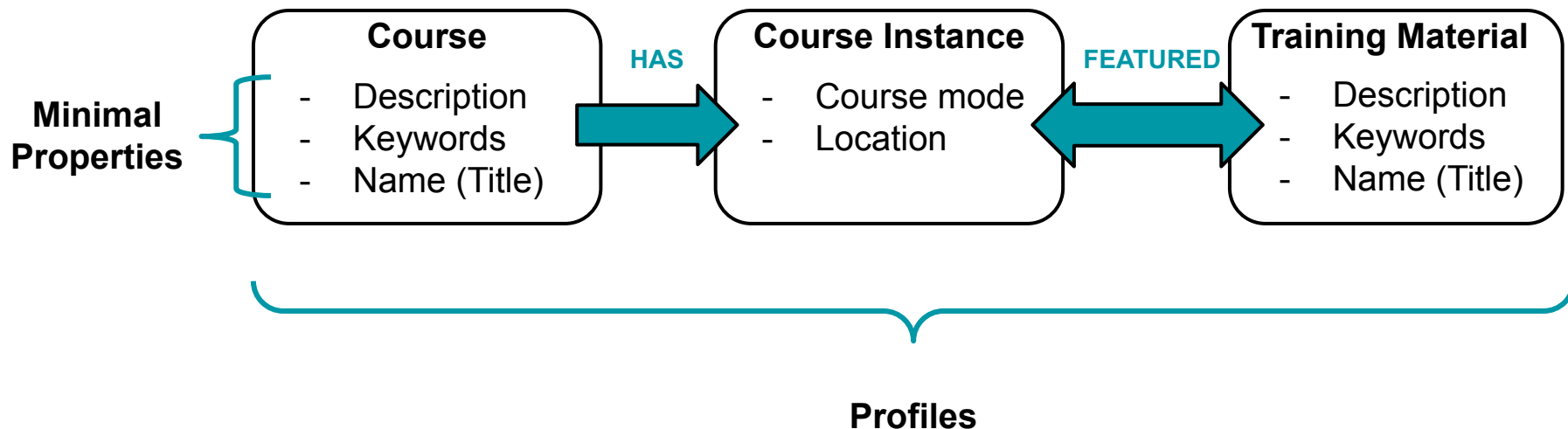
- Course:
 - FAIR training material made *by design*
- Course instance:
 - Sept 2024 - SE
 - Sept 2025 - BE
 - Sept 2026 - IT



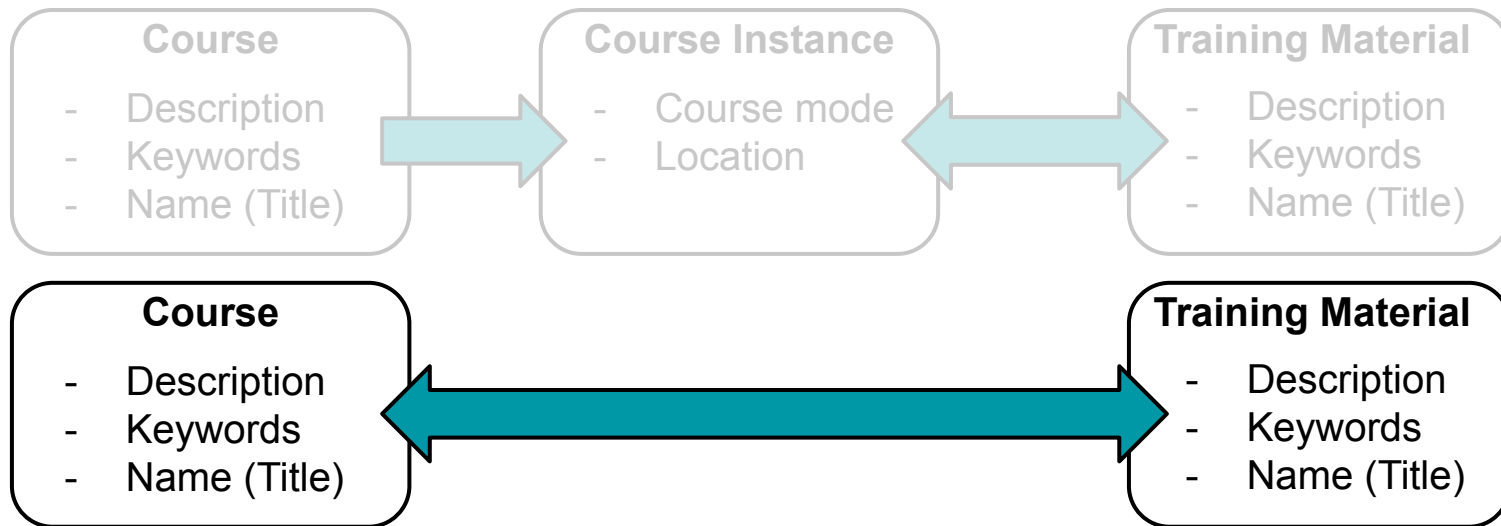
What properties there are in each profile



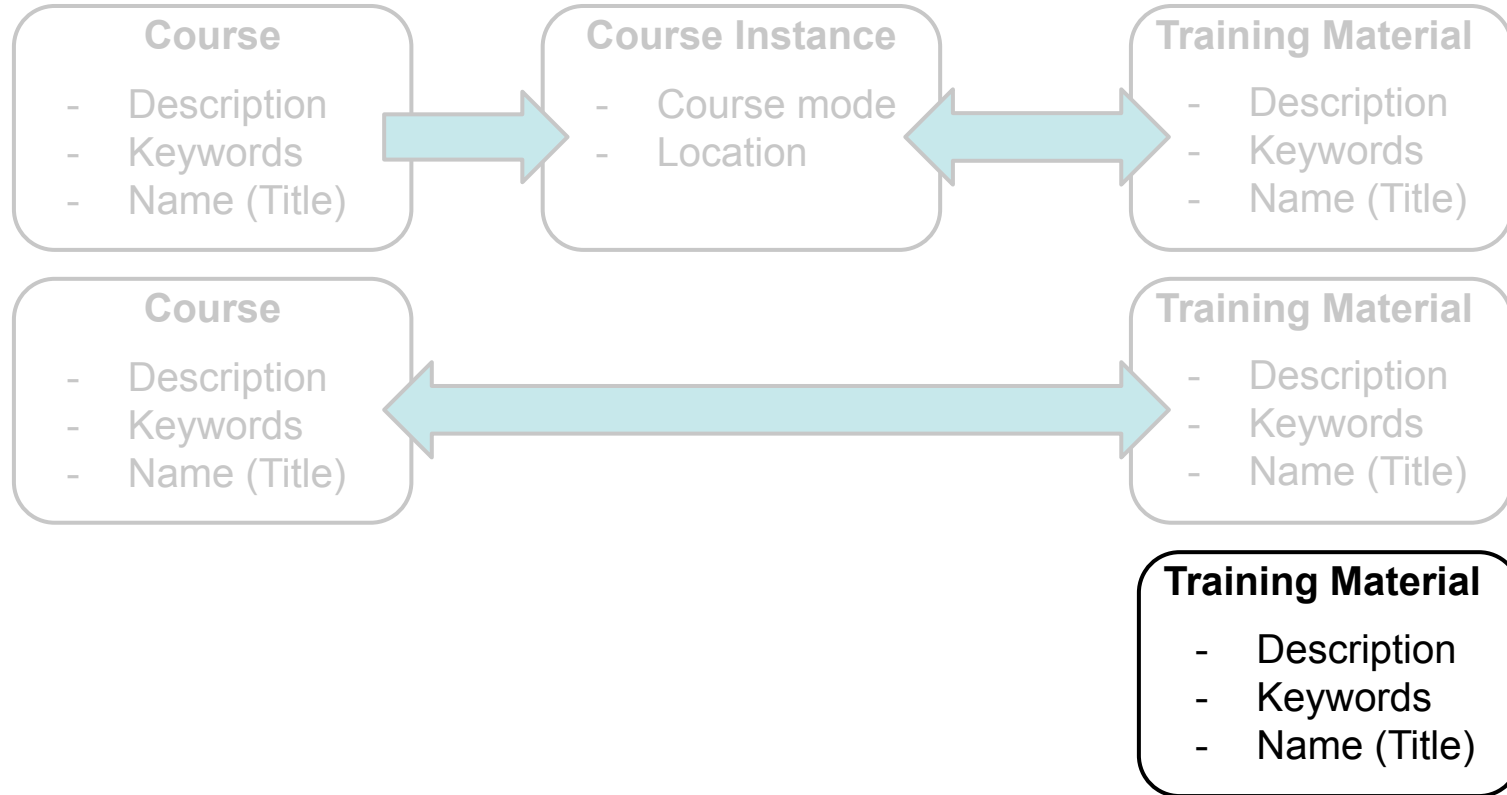
Training minimum properties



Training minimum properties



Training minimum properties



Find out all the properties



Bioschemas

<https://bioschemas.org/profiles/>



Home

Getting Started ▾

Specifications ▾

Deploy & Develop ▾

Community ▾

About ▾

Schema.org

**Bioschema
.org**

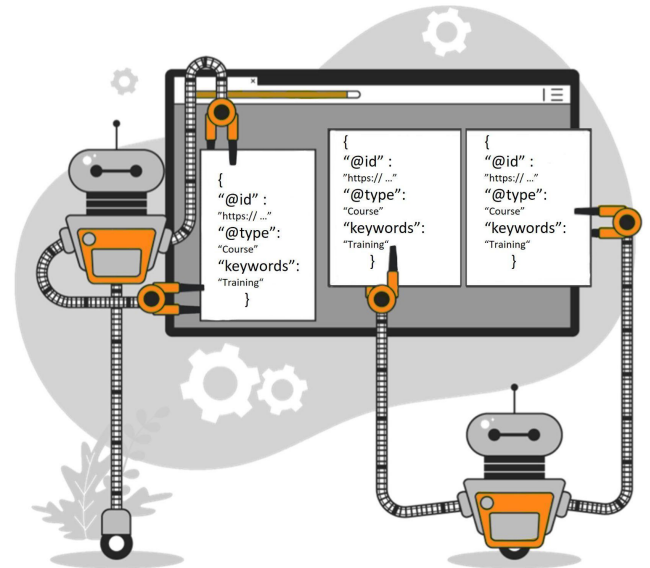
Bioschemas Profiles

[Propose a new profile](#)

The Bioschemas' profiles define a community agreed layer over the Schema.org vocabulary, providing additional constraints. These constraints capture (i) the information properties agreed by the community which are minimum (M), recommended (R), or optional (O), (ii) the cardinality of the property, i.e. whether it is expected to occur once or many times, and (iii) associated controlled vocabulary terms drawn from existing ontologies.

These guidelines provide community best practice that lead to consistent markup of life sciences resources on the Web. Comments and discussions on the [mailing list](#) or [GitHub issue tracker](#) are encouraged.

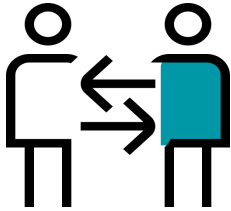
Impacts of Metadata



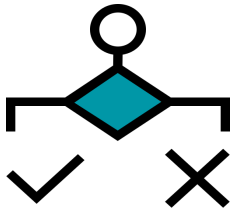
Metadata impact



Findability: Findable by search engines



Sharing: Structured information to evaluate



Decision making: Targeted judgment
Evaluation on reusability

Training e-Support System



Log In ▾

About

Events

Materials

e-Learning

Workflows

Collections

Directory ▾

How can TeSS help you?

Search the portal for courses, events, videos, presentations, learning pathways, handbooks...
All types of resources at all levels for leveraging **computational resources in the life sciences**.

Search TeSS...



Aggregator
Metadata keeper !!!



What you can **register** and **find** is TeSS portal?

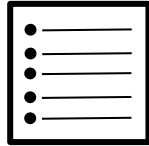


What you can **register** and **find** is TeSS portal?

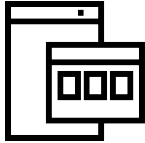
- Training material



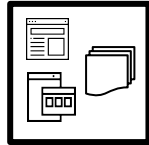
Course plan



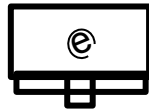
Tutorial



Course content



Collections

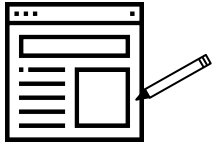


e-Learning course

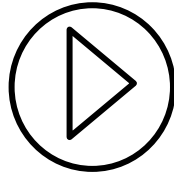


What you can **register** and **find** is TeSS portal?

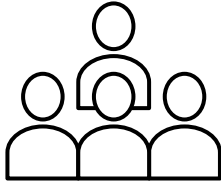
- Training material
- Events



Courses



Webinars



Congresses/ Symposiums



Who is feeding TeSS portal?



Who is feeding TeSS portal?

- 122 Content providers
 - Academic institutions
 - non-profit organisations
 - Other portals
- Registered people



TeSS is open source



What are you looking for?

Search SciLifeLab Training...



How can TeSS help you?

Search the portal for courses, events, videos, presentations, learning pathways, handbooks...
All types of resources at all levels for leveraging [computational resources in the life sciences](#).



General Search



Filter by session



Browse the catalogue



Events

Discover the latest training events and news from ELIXIR nodes and 3rd-party providers.

[Start browsing.](#) →



Materials

Browse the catalogue of training materials offered by ELIXIR nodes and 3rd-party providers.

[Start browsing.](#) →



Workflows

Create training workflows to visualise learning steps and link to resources specific to your training needs.

[Start browsing.](#) →

Activity:

1. Find a **training material** of intermediate difficulty for single cell data analysis
2. Find the **event** “FAIR training material made *by design*” course
3. Find **active training material** of NBIS
4. List how many **archived materials** NBIS has
5. Find when and where VIB will offer a super nice AI event



Let's prepare to register our own

Please note: This instance is for testing/development, and any content submitted may be changed or deleted without warning.



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[e-Learning](#)

[Workflows](#)

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[Learning paths](#)

[Directory ▾](#)

How can TeSS help you?

Search the portal for courses, events, videos, presentations, learning pathways, handbooks...

All types of resources at all levels for leveraging [computational resources in the life sciences](#).

Search TeSS...



Let's prepare to register our own

Please note: This instance is for testing/development, and any content submitted may be changed or deleted without warning.



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<https://dev.tess.elixir-europe.org/>

How can TeSS help you?

Search the portal for courses, events, videos, presentations, learning pathways, handbooks...

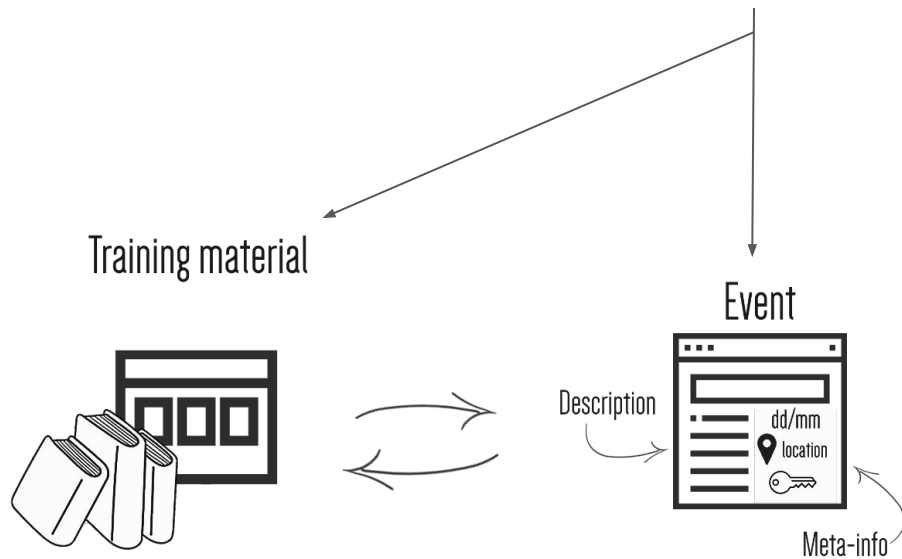
All types of resources at all levels for leveraging [computational resources in the life sciences](#).

Search TeSS...



Many ways to register

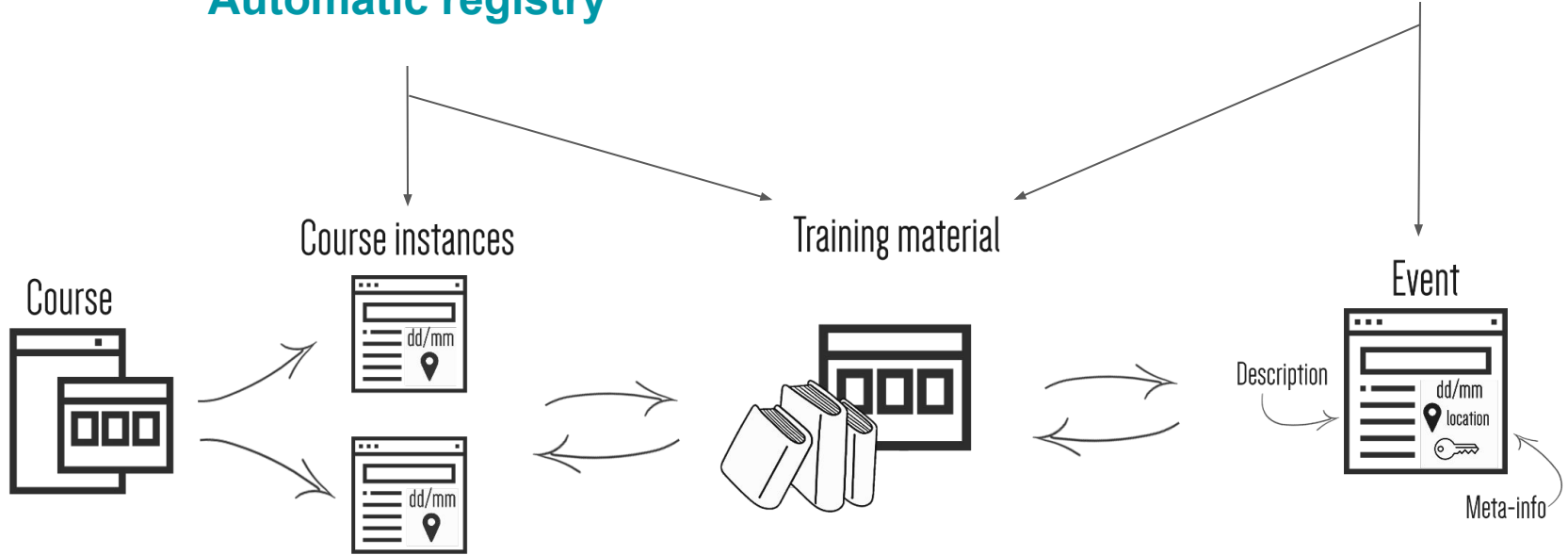
Manual Registry



Many ways to register

“Embedded” registry
Automatic registry

Manual Registry



Manual Registration

Please note: This instance is for testing/development, and any content submitted may be changed or deleted without warning.



bruna.piereck ▾

About **Events** **Materials** Learning Workflows Collections Learning paths Directory ▾

Home / Materials

Sort

Most recent ▾

Filter

Scientific topic ▾

Operation ▾

Tool ▾

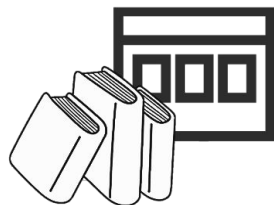
Training materials

Search materials...

1992 materials found **Subscribe** ▾

Register training material

SLIDES
GO Enrichment Analysis on Sing
• beginner
Single Cell



Manual Registry

Event

Description

Meta-info



New material

*Title

Add a title for your training material.

*URL

*Description

This field supports markdown. Read more on [markdown syntax](#).

Resource types

Scientific topics

Add a new scientific topic

Keywords

Licence

License Not Specified

Status

Select a status...

Structured data in disguise

Properties

Activity:

1. Create an imaginary event on dev.tess.elixir-europe.org, later we will link our training material to this event.
 - a. Annotate as much metadata as you can for your training
 - b. Try to think of what usually you would annotate
 - c. I trust you can do more than the minimum

**Minimal
Properties**

Course

- Description
- Keywords
- Name (Title)

Course Instance

- Course mode
- Location

Manually you
can not
differentiate !

Structured data

JSON object

- Data is in key/value pairs
 - KEY: VALUE

```
"@type": "Person"  
"name": "Bruna Piereck"
```

```
"@type": "Person"  
"name": "Olivier Sand"
```

```
"@type": "Person"  
"name": "Alexander Botzki"
```

Structured data

JSON object

- Data is in key/value pairs
- Data is separated by commas

```
"@type": "Person",  
"name": "Bruna Piereck"
```

```
"@type": "Person",  
"name": "Olivier Sand"
```

```
"@type": "Person",  
"name": "Alexander Botzki"
```

Structured data

JSON object

- Data is in name/value pairs
- Data is separated by commas
- Square brackets hold arrays (collection of elements)
 - Name : [collection]

```
"author": [  
  "  
    "@type": "Person",  
    "name": "Bruna Piereck"  
  "  
    "@type": "Person",  
    "name": "Olivier Sand"  
  "  
    "@type": "Person",  
    "name": "Alexander Botzki"  
  ],
```

Structured data

JSON object

- Data is in key/value pairs
- Data is separated by commas
- Square brackets hold arrays (collection of elements)
- Curly braces hold objects

```
"author": [  
  {  
    "@type": "Person",  
    "name": "Bruna Piereck"  
  },  
  {  
    "@type": "Person",  
    "name": "Olivier Sand"  
  },  
  {  
    "@type": "Person",  
    "name": "Alexander Botzki"  
  }  
],
```


Example of structured data

Example of JSON-LD

```
JSON
  @context : "https://schema.org"
  @id : "https://www.bbcgoodfood.com/recipes/classic-potato-salad#Recipe"
  @type : "Recipe"
  description : "Our classic potato salad recipe is the perfect barbecue side dish, great for picnic spreads o
  image
  mainEntityOfPage
    name : "Classic potato salad"
    url : "https://www.bbcgoodfood.com/recipes/classic-potato-salad"
  author
    dateModified : "2022-11-08T13:31:53+00:00"
    datePublished : "2009-11-16T03:28:19+00:00"
    headline : "Classic potato salad"
    keywords : "Caper, Capers, Christmas Eve, Classic, Cornichon, Cornichons, Make ahead, Matt Tebbutt,
  publisher
    isAccessibleForFree : "False"
  hasPart
    cookTime : "PT20M"
  nutrition
    prepTime : "PT20M"
    recipeCategory : "Afternoon tea, Buffet, Dinner, Side dish"
```

Example of structured data

Example of JSON-LD

JSON

- @context : "https://schema.org"
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- mainEntityOfPage
 - name : "Classic potato salad"
 - url : "https://www.bbcgoodfood.com/recipes/classic-potato-salad"
- author
 - dateModified : "2022-11-08T13:31:53+00:00"
 - datePublished : "2009-11-16T03:28:19+00:00"
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 - keywords : "Caper, Capers, Christmas Eve, Classic, Cornichon, Cornich"
- publisher
 - isAccessibleForFree : "False"
- hasPart
 - cookTime : "PT20M"
- nutrition
 - prepTime : "PT20M"
 - recipeCategory : "Afternoon tea, Buffet, Dinner, Side dish"

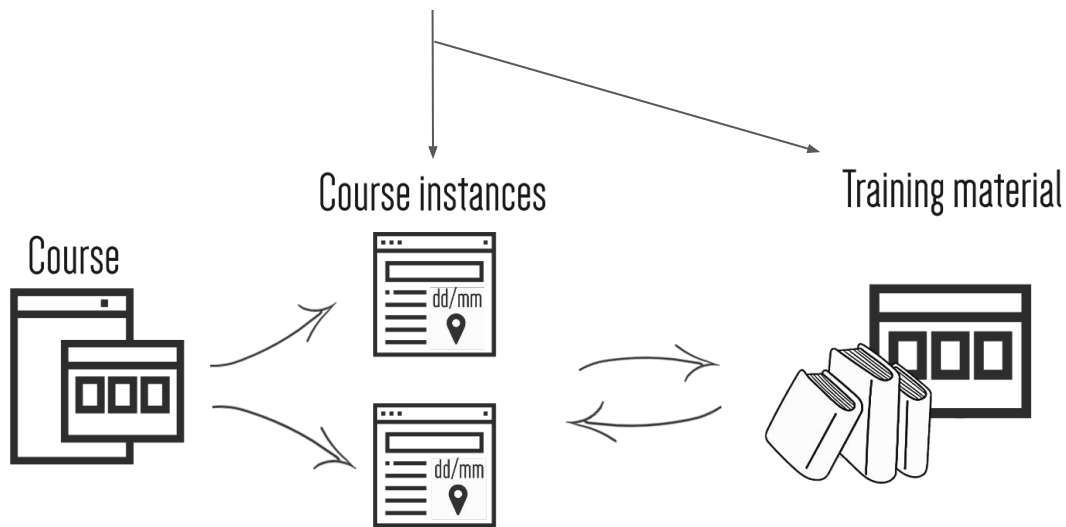
I'll do it for you in the background

TeSS

Adapted from @Sketchopedia - freepick.com

“Embedded” Registration

“Embedded” registry
Automatic registry



- JSON object -

```
{JSON
  Key:descriptor
  Key:descriptor
  .
  .
  .
```

```
{
  "@context": "https://schema.org/",
  "@type": "LearningResource",
  "@id": "https://elixir-europe-training.github.io/ELIXIR-TrP-TeSS/",
  "http://purl.org/dc/terms/conformsTo": {
    "@type": "CreativeWork",
    "@id": "https://bioschemas.org/profiles/TrainingMaterial/1.0-RELEASE"
  },
  "description": "TeSS, how can I help you? This is our interactive hands-on course about efficient use",
  "keywords": "FAIR, OPEN, Bioinformatics, Teaching, TeSS",
  "name": "TeSS, how can I help you?",
  "license": "https://creativecommons.org/licenses/by/4.0/",
  "educationalLevel": "beginner",
  "competencyRequired": "none",
  "teaches": [
    "search events and material in TeSS via direct and faceted search",
    "add manually and automatically events and material to TeSS",
    "extract events and material from TeSS by using TeSS widgets"
  ],
  "audience": "training providers",
  "inLanguage": "en-US",
  "learningResourceType": [
    "tutorial"
  ],
  "author": [
    {
      "@type": "Person",
      "name": "Bruna Piereck"
    },
    {
      "@type": "Person",
      "name": "Olivier Sand"
    }
  ]
}
```

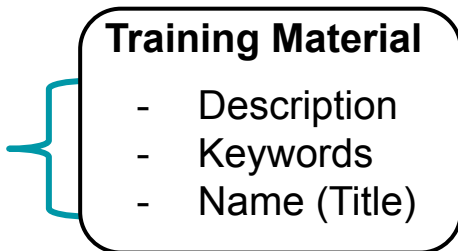


GitHub Octocat, by simon oxley,
attribution and non-derivative license

Activity:

1. Annotate your training material metadata
 - a. Annotate as much metadata as you can for your training material
 - b. Try to think of what usually you would annotate
 - c. I trust you can do more than the minimum
 - d. Link this material to the event

**Minimal
Properties**



Activity:

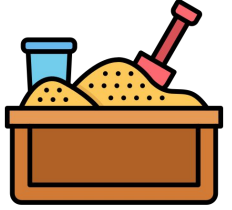
1. Annotate your training material metadata
 - a. Annotate as much metadata as you can for your training material
 - b. Try to think of what usually you would annotate
 - c. I trust you can do more than the minimum
 - d. Link this material to the event
 - i. Manual: the tab is a look-up type the title of your material to embed it in the event.

**If you are using GitHub,
use the template to include
all the metadata**



GitHub Octocat, by simon oxley, attribution and non-derivative license

Activity:



@Maan Icons in freepik

1. Extract your JSON file from TeSS
 - a. Validate the individual page with the schema.org validator by pasting the URL into the Fetch URL tab.
 - b. You will get the the HTML code of the web site on the left side and a list of type from schema.org.
 - c. In the HTML code, look for a script element with the attribute `type="application/ld+json"`. This script element could be a child of the head element of the HTML page. This results in the following script HTML element.
 - d. Copy the JSON object and paste it into a file called course-descr.json

Demo:



Scrape the metadata about the material into TeSS

We will demo how you could set up an automated mechanism to get training material into TeSS.